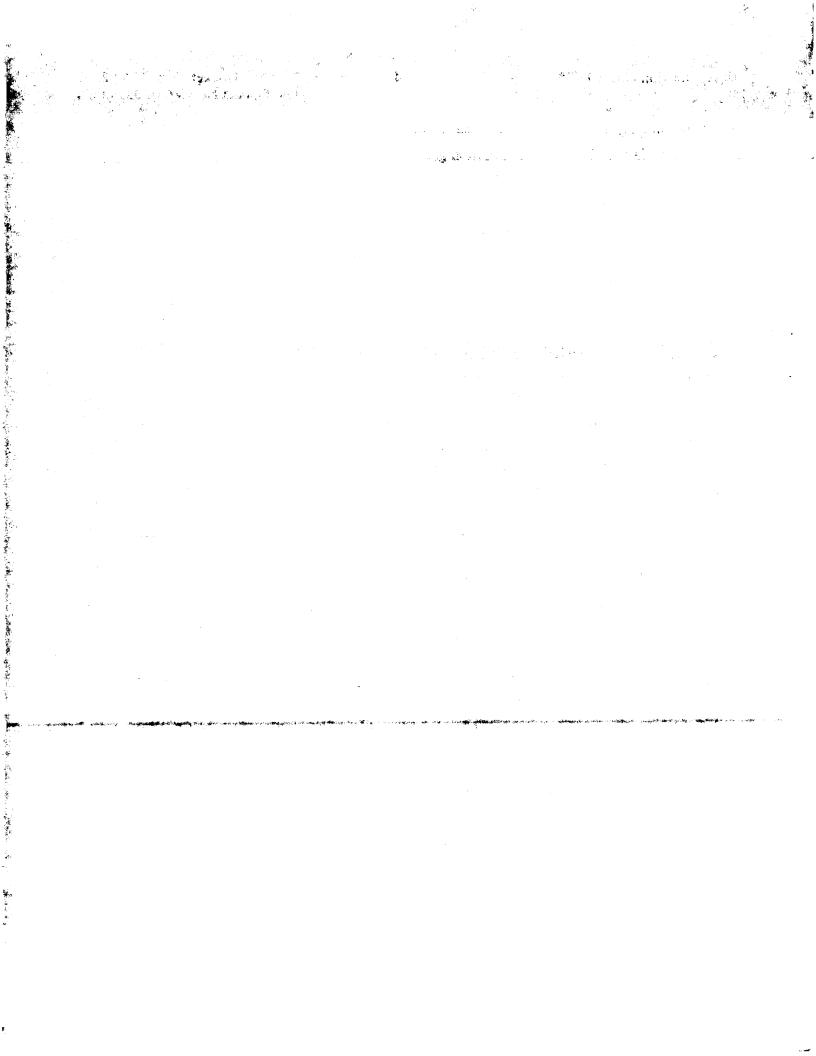
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## **Listing of Claims:**

1. (Currently Amended) A method of fabricating GaAs<sub>(1-x)</sub>Sb<sub>x</sub>-layers <u>a tunnel</u> junction of a vertical cavity surface emitting laser (VCSEL), comprising:

locating a substrate in an MOCVD chamber; setting a temperature of the MOCVD chamber between 500 °C and 650 °C; and growing a tunnel junction including GaAs<sub>(1-x)</sub>Sb<sub>x</sub> on the substrate using an MOCVD process in which a source of Ga, a source of Sb, and a source of As are present.

- 2. (Original) The method according to claim 1, wherein x has a value corresponding to a ratio of As to Sb.
  - 3. (Original) The method according to claim 2, wherein the value of x is 0.5.
- 4. (Original) The method according to claim 2, wherein the value of x is less than 0.5.
- 5. (Original) The method according to claim 1, wherein the source of Ga is TMGa or TEGa, and the source of Sb is TMSb.
- 6. (Original) The method according to claim 1, wherein the source of As is  $AsH_3$  or TBAs.
- 7. (Original) The method according to claim 1, further including carbon doping the GaAs<sub>(1-x)</sub>Sb<sub>x</sub> using CCl<sub>4</sub> or CBr<sub>4</sub>.
  - 8. (Original) A tunnel junction having of a p-doped  $GaAs_{(1-x)}Sb_x$  layer.
- 9. (Currently Amended) [[A]] <u>The</u> tunnel junction according to claim 8, wherein the p-doped GaAs<sub>(1-x)</sub>Sb<sub>x</sub> layer is doped with carbon with a concentration greater than 1x10<sup>19</sup> cm<sup>-3</sup>.
- 10. (Currently Amended) [[A]] <u>The</u> tunnel junction according to claim 9, further including an n-doped layer of InP, AlInAs, AlInGaAs, or InGaAsP.
  - 11. (Currently Amended) [[A]] The tunnel junction according to claim 10, wherein



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the n-doped layer is doped with a concentration greater than  $5x10^{19}$  cm<sup>-3</sup>, wherein the  $GaAs_{(1-x)}Sb_x$  layer is doped with a concentration greater than  $5x10^{19}$  cm<sup>-3</sup>, and wherein the n-doped layer is less than about 10 nanometers thick.

- 12. (Currently Amended) [[A]] <u>The</u> tunnel junction according to claim 10, wherein the n-doped layer is InP, and wherein x has a value of 0.5.
- 13. (Original) A vertical cavity surface emitting laser, comprising:

  an active region having a plurality of quantum wells, and
  a tunnel junction over said active region, wherein said tunnel junction includes a

  GaAs<sub>(1-x)</sub>Sb<sub>x</sub> layer.
- 14. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 13, further including an n-type bottom spacer adjacent the active region, and an n-type bottom DBR adjacent the n-type bottom spacer.
- 15. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 13, further including an n-type top spacer adjacent the tunnel junction and an n-type top DBR adjacent the n-type top spacer.
- 16. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 13, wherein the GaAs<sub>(1-x)</sub>Sb<sub>x</sub> layer is grown by MOCVD.
- 17. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 13, wherein the  $GaAs_{(1-x)}Sb_x$  layer is doped with carbon with a concentration greater than  $5x10^{19}$  cm<sup>-3</sup>.
- 18. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 13, wherein said active region includes InGaAsP or AlInGaAs.
- 19. (Currently Amended) [[A]] <u>The</u> vertical cavity surface emitting laser according to claim 18, wherein said tunnel junction includes an n-type InP layer.
  - 20. (Currently Amended) [[A]] The vertical cavity surface emitting laser according to

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claim 13, wherein x is 0.5.

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